

A Comprehensive Water Safety Plan for Kilinochchi *Dri Aaru* Water Supply Scheme

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The safe drinking water is essential to human health but water borne disease is one of the major health problems worldwide. In Asian countries, safe drinking water supply at household level is limited and the rural area people use drinking water from unprotected wells, springs and surface water without any treatment. Due to this reason, World Health Organization (WHO) proposed the water safety plan to assure the safe drinking water to all. Specially, in the Northern Province of Sri Lanka, a comprehensive water safety plan has never been practised. However, there is an essential for a water safety plan to ensure the safety of drinking water through the use of a comprehensive risk assessment and risk management approach that encompasses all steps in water supply from catchment to consumer. This research study focused on preparing a comprehensive water safety plan in wet season for Kilinochchi *Dri aaru* water supply scheme with the risk analysis of potential contaminants, physical hazards and chemical hazards at catchment level, treatment level and distribution level. A number of water quality parameters including pH, electrical conductivity, salinity, total dissolved solids, temperature, total iron, total phosphate, total nitrate, total nitrite, total sulphate, total fluoride, free chlorine and turbidity were measured. The results showed that deviation of total iron and total phosphate are slightly above the standard level as prescribed by WHO but the level of salinity is identified as 150 ppm whereas it should have been 40 ppm. So, it was concluded salinity is the main factor that affects drinking water quality. The sources of potential contaminant were also identified with the point of contamination.

Keywords: Catchment, Hazard risk assessment, Treatment